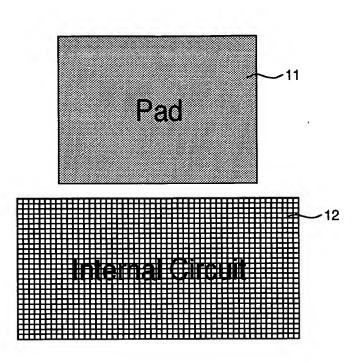
TITLE: IMPROVING ELECTROSTATIC DISCHARGE PERFORMANCE OF A SILICON STRUCTURE AND EFFICIENT USE OF AREA WITH ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE UNDER THE PAD APPROACH AND ADJUSTMENT OF VIA CONFIGURATION THERETO TO CONTROL DRAIN JUNCTION RESISTANCE

INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun USSN: 10/758,173 Attorney Docket #: AMD-AF01210

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<u>10</u>



Top side view

(Conventional Art) Fig. 1

TITLE: IMPROVING ELECTROSTATIC DISCHARGE PERFORMANCE OF A SILICON STRUCTURE AND EFFICIENT USE OF AREA WITH ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE UNDER THE PAD APPROACH AND ADJUSTMENT OF VIA CONFIGURATION THERETO TO CONTROL DRAIN JUNCTION RESISTANCE INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun USSN: 10/758,173 Attorney Docket #: AMD-AF01210

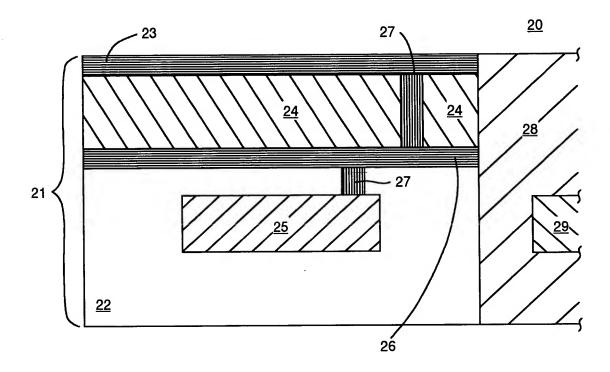
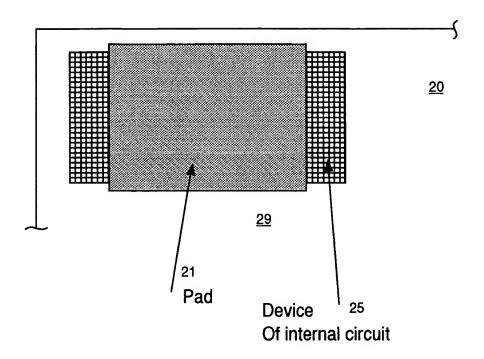


Fig. 2

TITLE: IMPROVING ELECTROSTATIC DISCHARGE PERFORMANCE OF A SILICON STRUCTURE AND EFFICIENT USE OF AREA WITH ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE UNDER THE PAD APPROACH AND ADJUSTMENT OF VIA CONFIGURATION THERETO TO CONTROL DRAIN JUNCTION RESISTANCE INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun

USSN: 10/758,173 Attorney Docket #: AMD-AF01210

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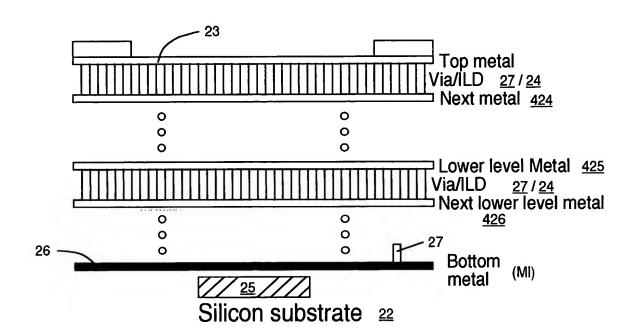
Top side view

Fig. 3

TITLE: IMPROVING ELECTROSTATIC DISCHARGE PERFORMANCE OF A SILICON STRUCTURE AND EFFICIENT USE OF AREA WITH ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE UNDER THE PAD APPROACH AND ADJUSTMENT OF VIA CONFIGURATION THERETO TO CONTROL DRAIN JUNCTION RESISTANCE INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun USSN: 10/758,173 Attorney Docket #: AMD-AF01210

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400



Cross section view

Fig. 4

TITLE: IMPROVING ELECTROSTATIC DISCHARGE PERFORMANCE OF A SILICON STRUCTURE AND EFFICIENT USE OF AREA WITH ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE UNDER THE PAD APPROACH AND ADJUSTMENT OF VIA CONFIGURATION THERETO TO CONTROL DRAIN JUNCTION RESISTANCE INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun

USSN: 10/758,173 Attorney Docket #: AMD-AF01210

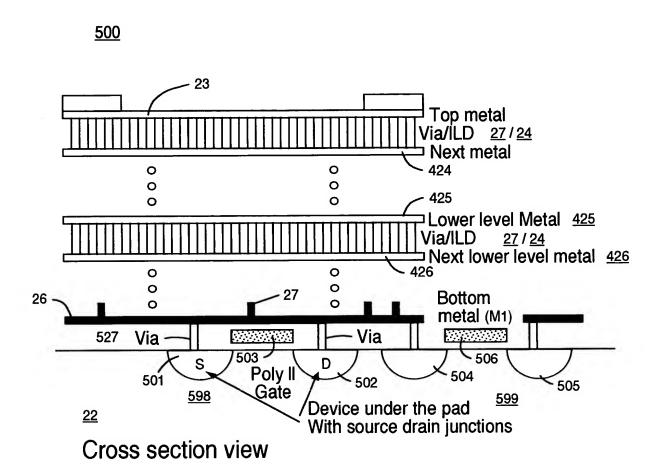


Fig. 5

INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun USSN: 10/758,173 Attorney Docket #: AMD-AF01210

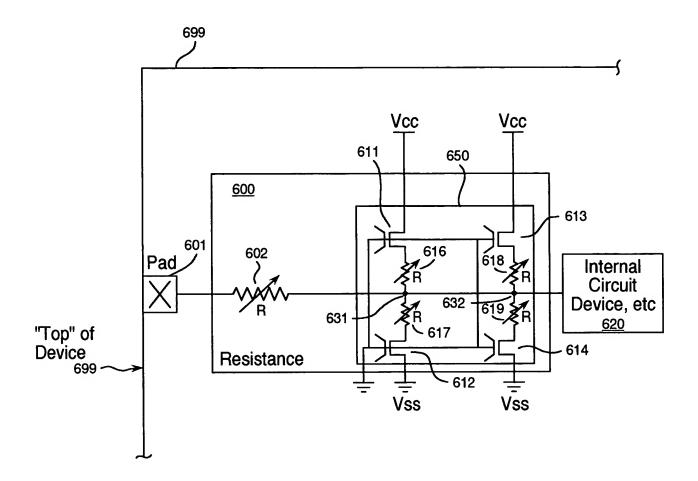


Fig. 6

TITLE: IMPROVING ELECTROSTATIC DISCHARGE PERFORMANCE OF A SILICON STRUCTURE AND EFFICIENT USE OF AREA WITH ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE UNDER THE PAD APPROACH AND ADJUSTMENT OF VIA CONFIGURATION THERETO TO CONTROL DRAIN JUNCTION RESISTANCE INVENTOR(S): Nian Yang, Hiroyuki Ogawa, Yider Wu, Kuo-Tung Chang, and Yu Sun USSN: 10/758,173 Attorney Docket #: AMD-AF01210

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<u>700</u> 742 743 The number of these vias are adjusted To achieve the best resistance for the Drain junction 723 Top metal Via/ILD 724 Next metal 731 0 0 0 0 0 Lower level Metal 732 Via/ILD 724 Next lower level metal 733 0 0 0 0 726 **Bottom** 0 0 metal (M1) 706 703 <u>705</u> 711 712 **ESDP** <u>722</u> Device under the pad With source drain junctions Cross section view

Fig. 7

## Fabricating a Semiconductor Structure with ESD Protection <u>80</u>

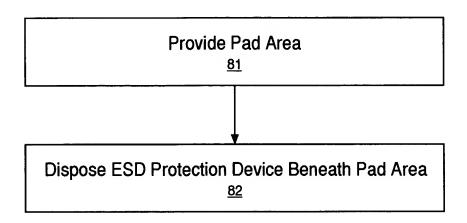


Fig. 8

## 90 Fabricating a Semiconductor Structure

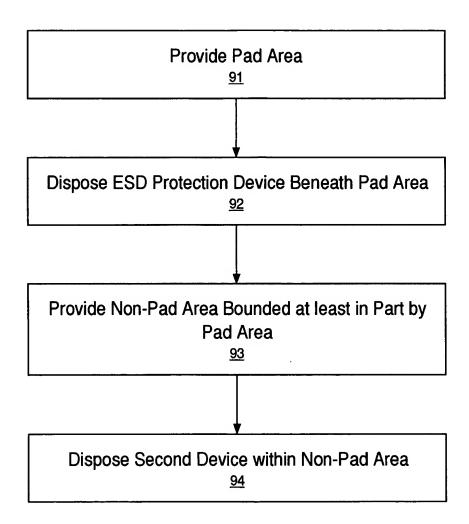


Fig. 9

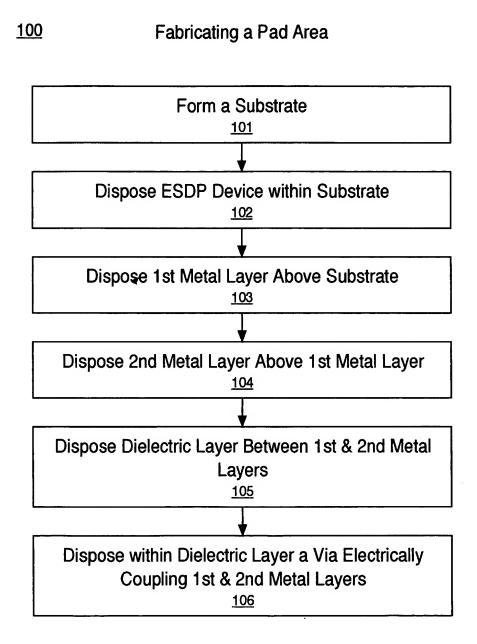


Fig. 10

## 1100 Fabricating a Pad Area with ESD Protection Device Below

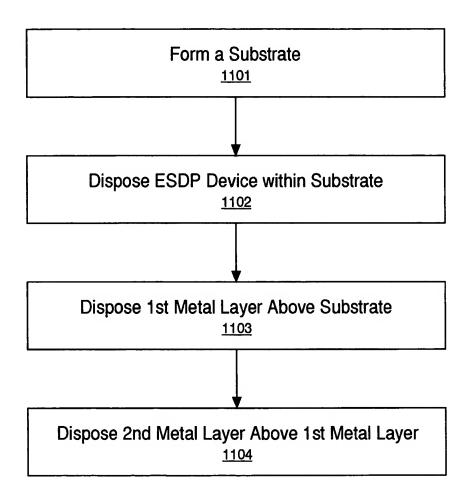


Fig. 11

## 1200 Fabricating a Pad Area with ESDP Below

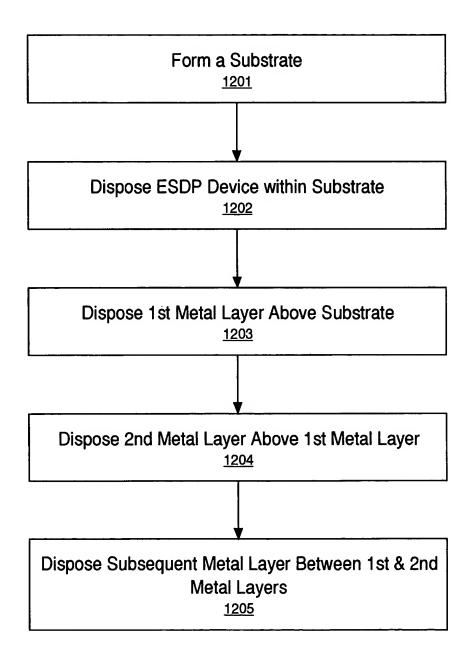


Fig. 12

Attorney Docket #: AMD-AF01210

USSN: 10/758,173

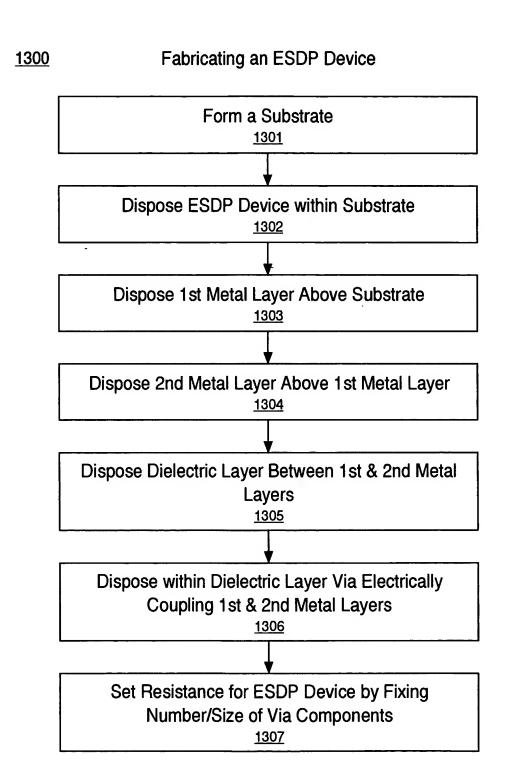


Fig. 13